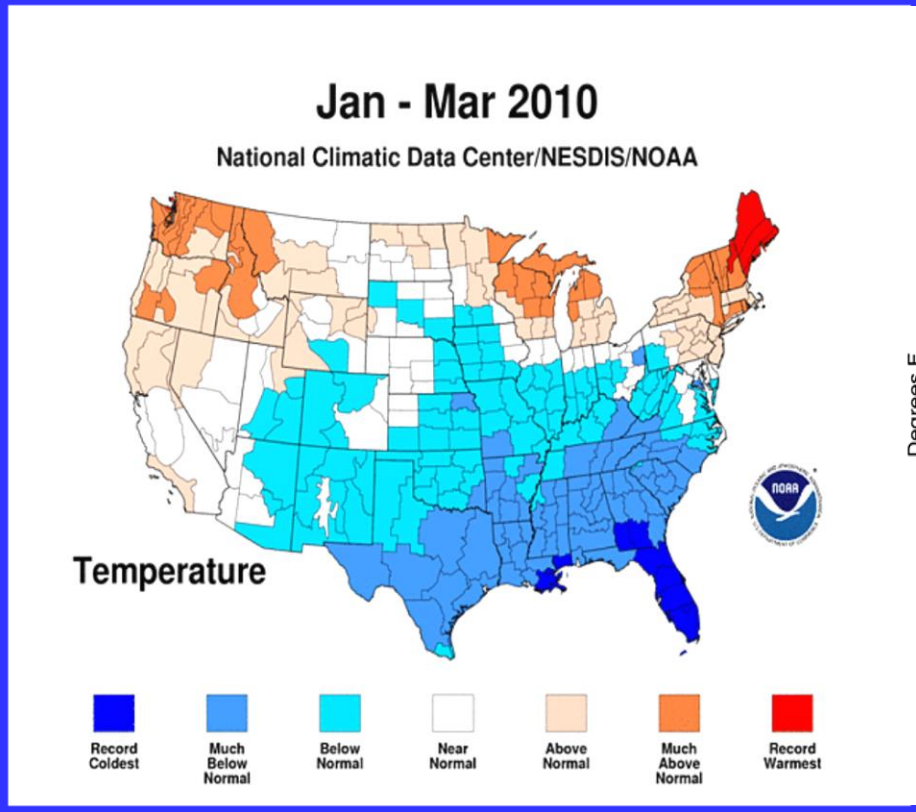
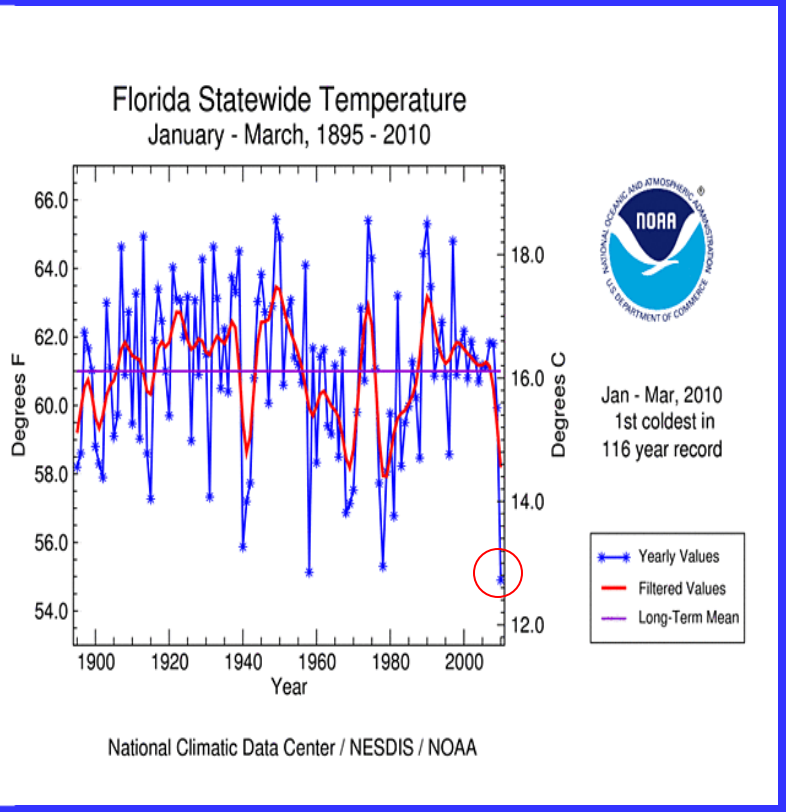
Weekly Climate Update May 11th 2010

- In the most recent official CPC seasonal climate outlook made April 15th there is only one climate window with a shift in the climate regime predicted (towards wetter or drier than normal). In the March CPC Outlook there were several windows shifted towards increased chances of above normal rainfall.
- The potential for an active tropical season is currently in place. The North Tropical Atlantic SSTs are near or at record warmth and updates of the CFS predictions are continually hedging more towards neutral and possibly La Nina conditions for later this summer. The evolution of these systems will need to be continually monitored in the upcoming months. Atmospheric and ocean conditions this year have similar characteristics as those of 1969

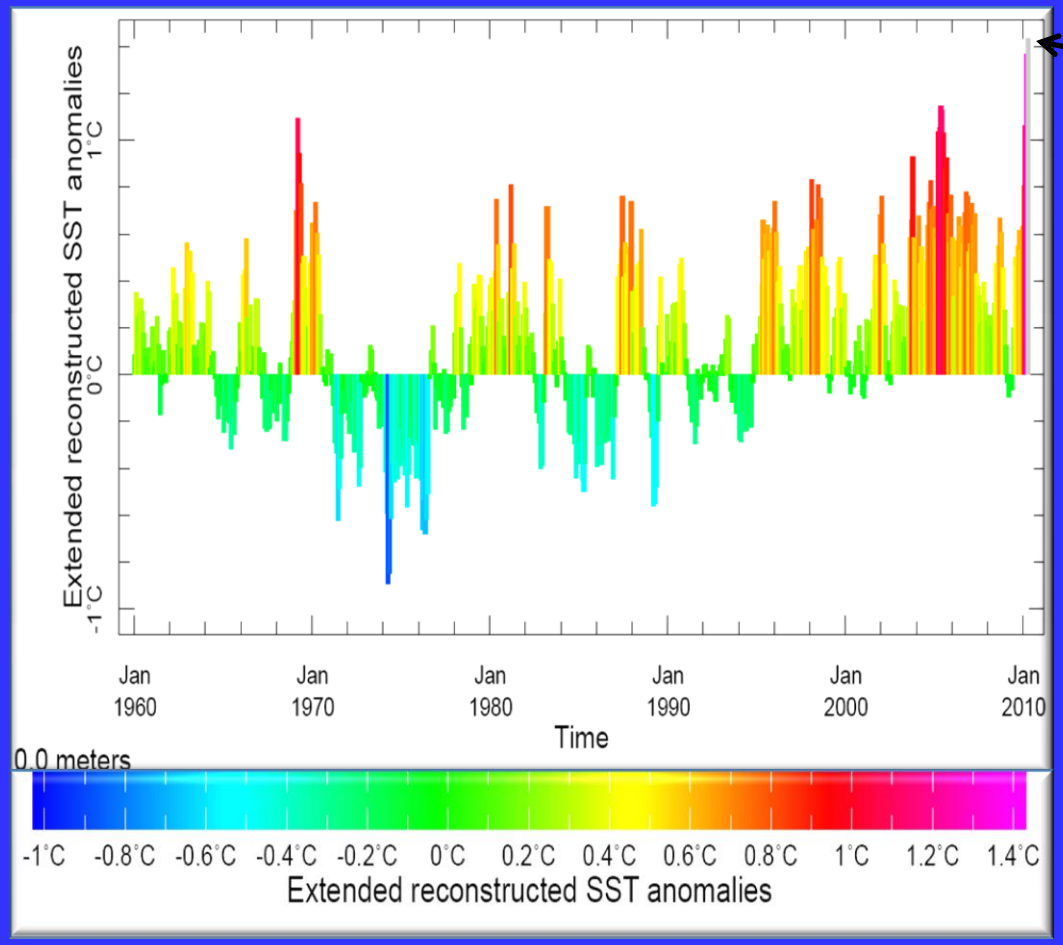
Record Cold Florida Winter

- **Orlando: 55.8°F** (Previous record: 56.9°, *1954*)
- **Daytona Beach: 54.0°** (Previous record: 54.1°, *1940*)
- West Palm Beach: Coldest January-March on record

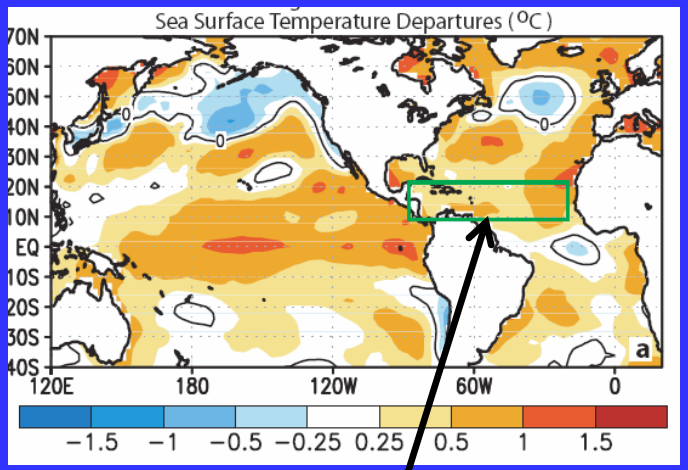




Tropical Atlantic Ocean Sea Surface Temperature Anomaly within the Hurricane Main Development Region (MDR)

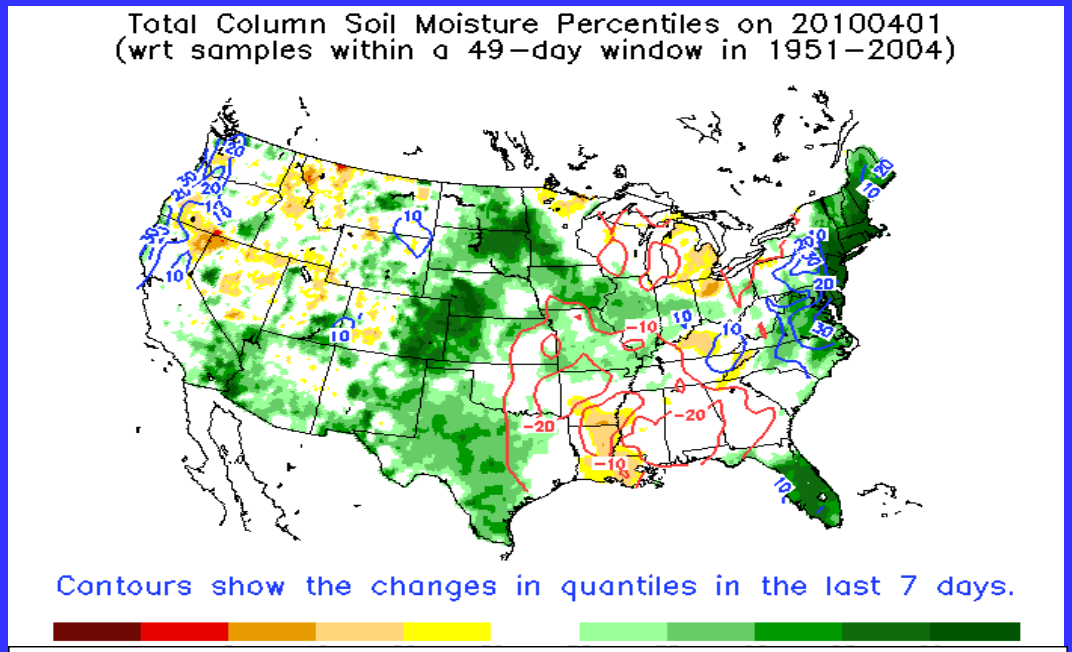


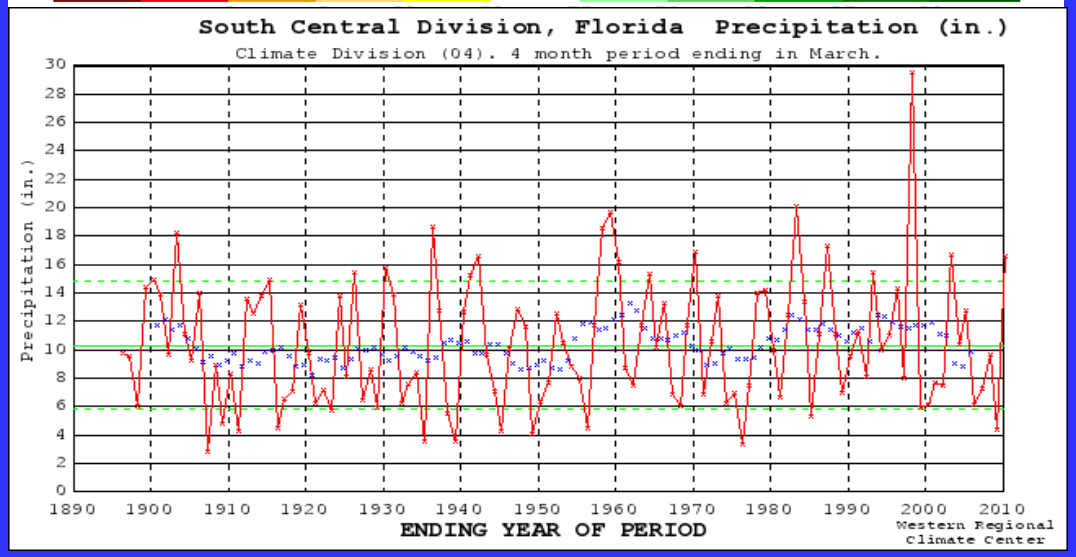
Atlantic Ocean MDR at record warmth for time of the year



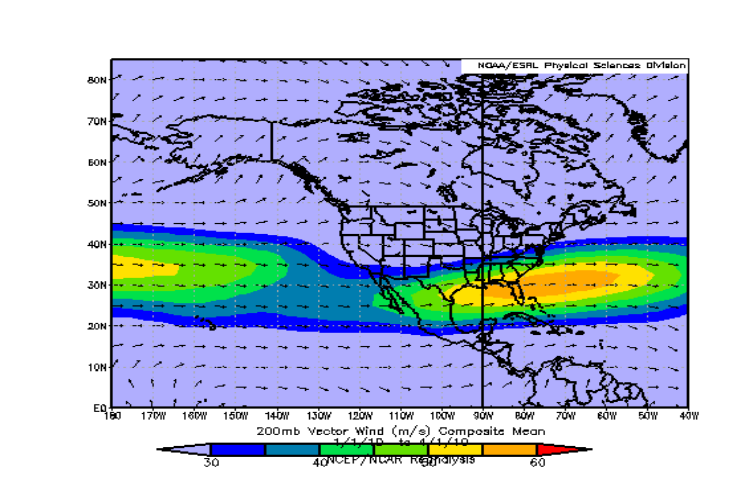
MDR Sea Surface temperatures anomaly between 10-20N and 80-20W

2010 had one of the wettest antecedent conditions on April 1st Primarily caused by much below normal temperatures and above normal rainfall.

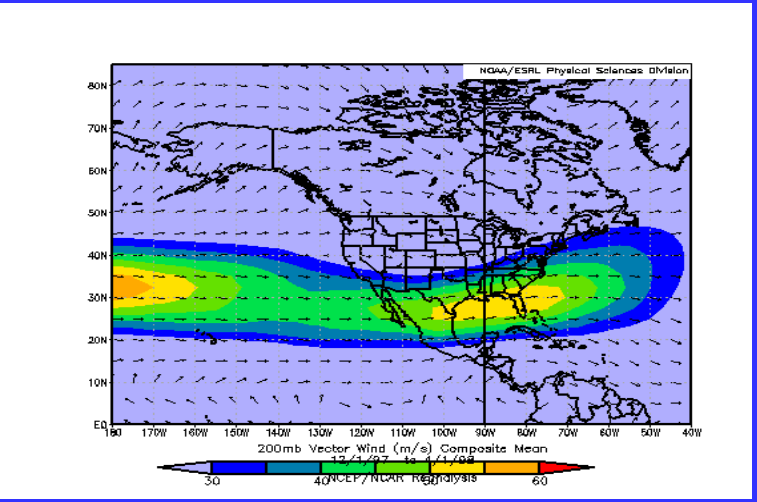




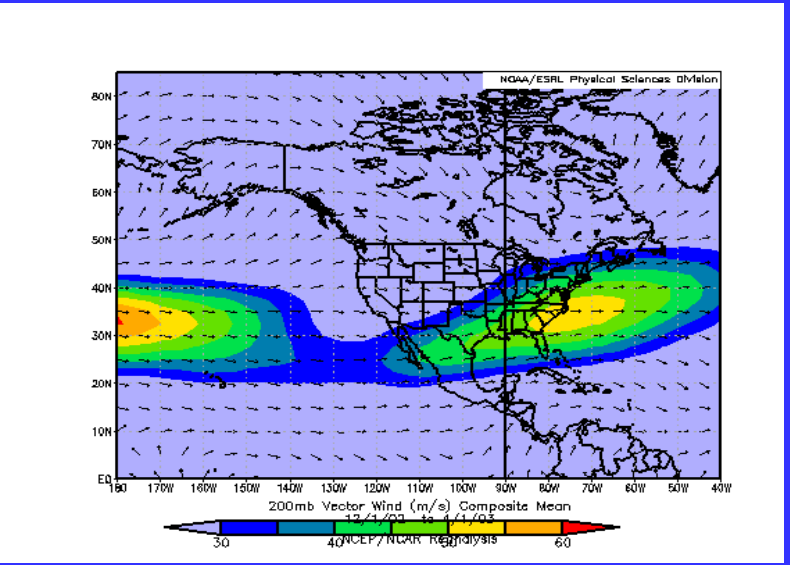
➢2009-2010 El Nino



➢1997-1998 Super El Nino



➢2002-2003 El Nino

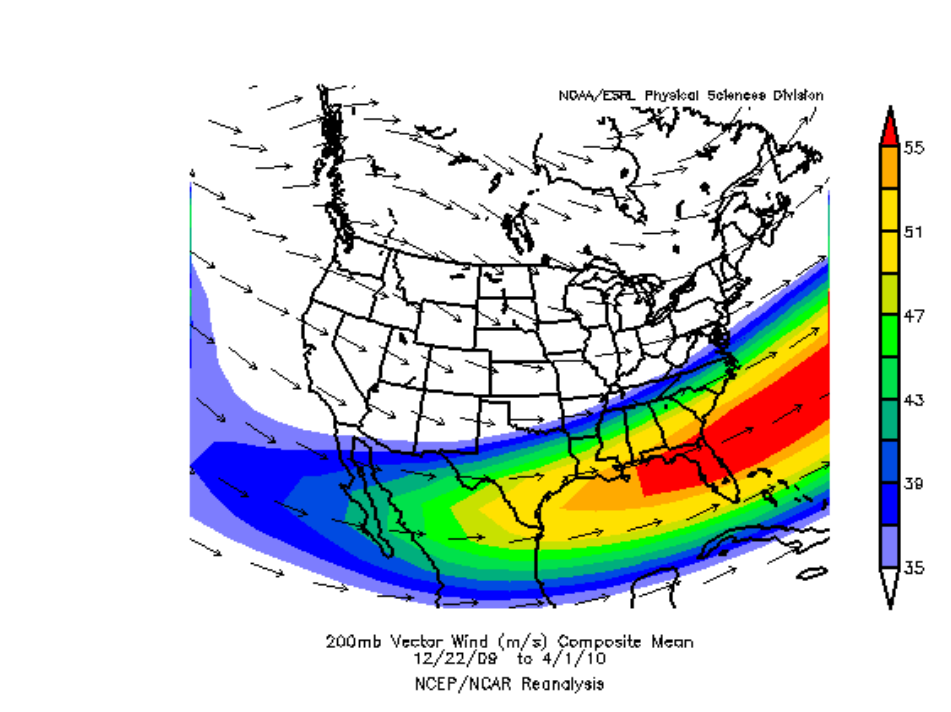


2010 jet stream even more intense over Florida than 1997-1998

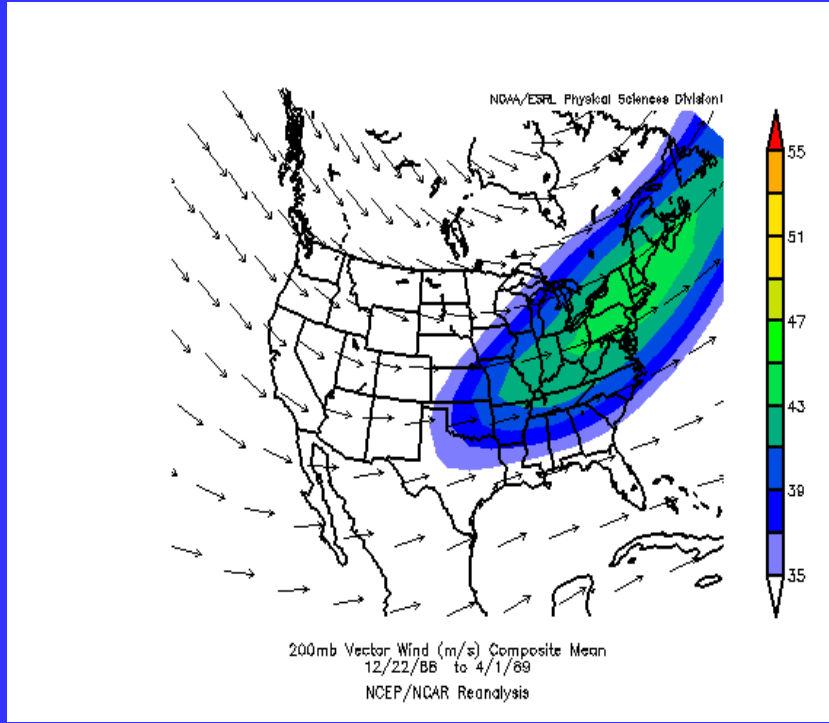
2010 Jet Stream shifted Southward

Caused by El Nino and Arctic Oscillation

2010 El Nino

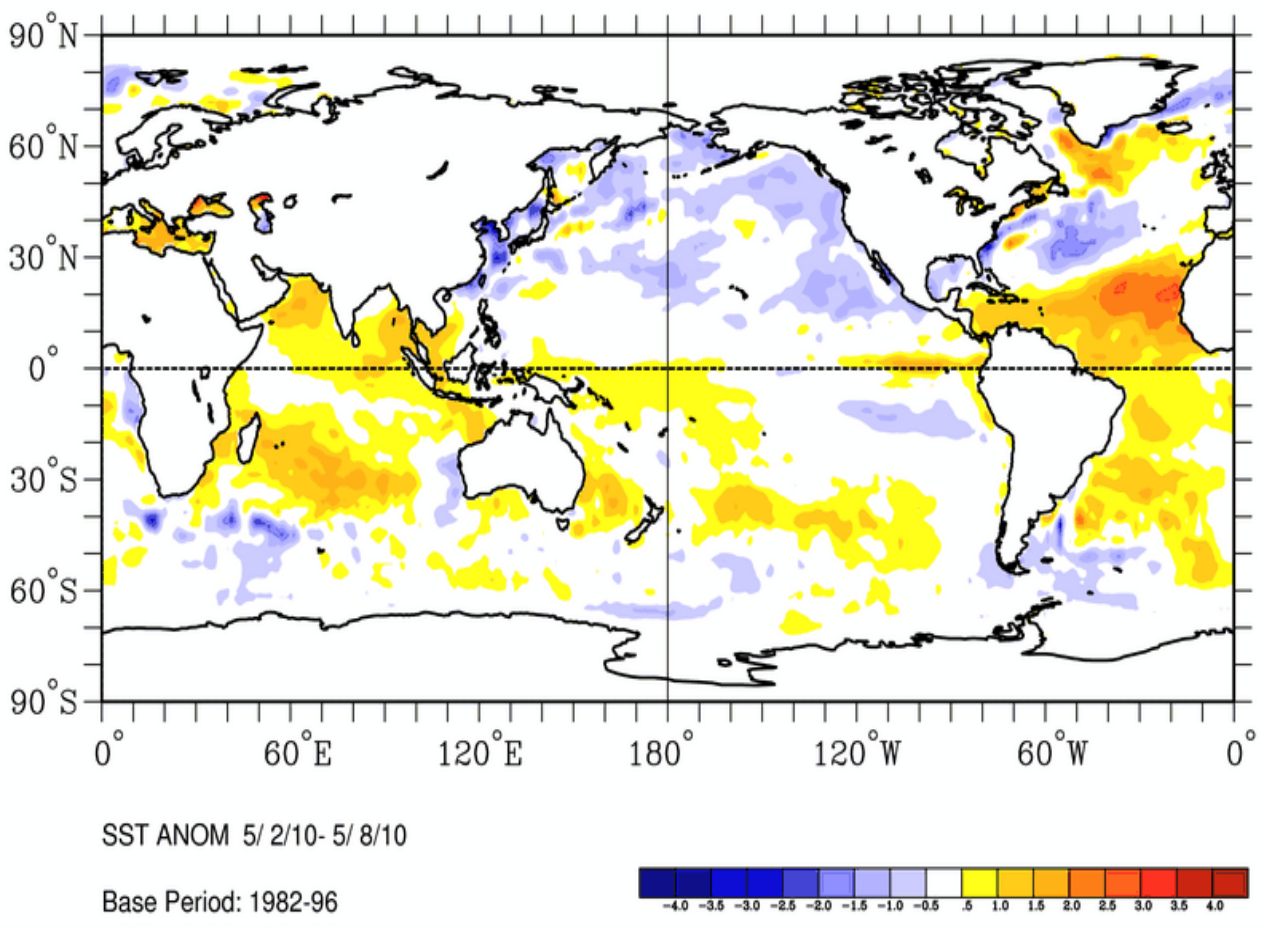


1989 La Nina



Jet Stream directly over northern Florida on average. This is where the greatest upper air energy for storm development exists.

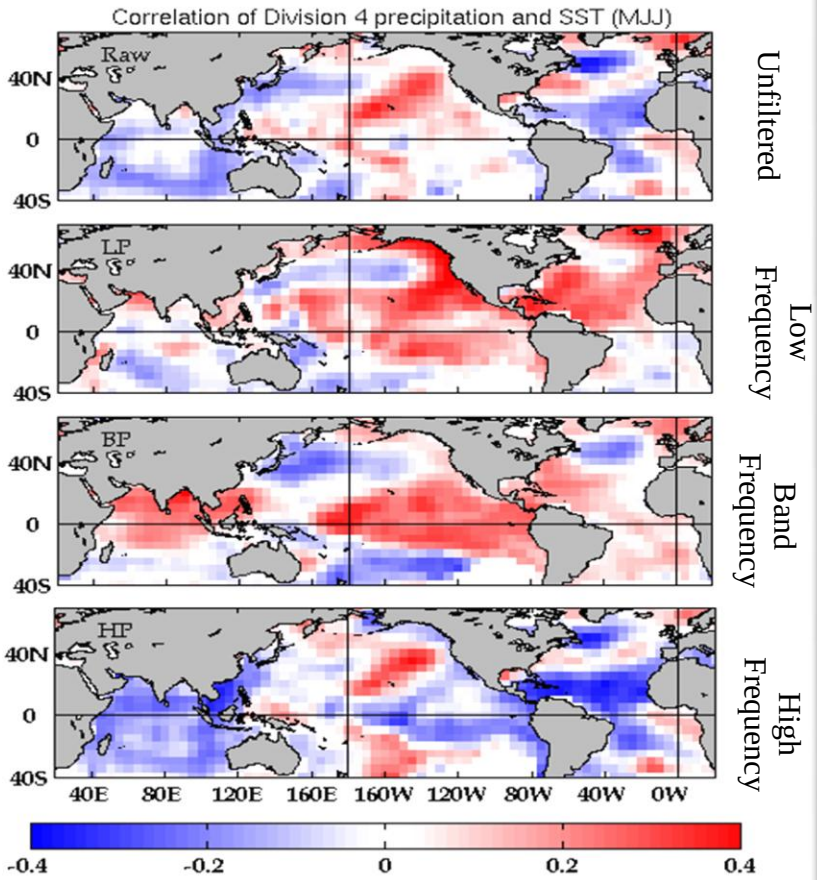
Latest Weekly Global Sea Surface Temperature Anomaly



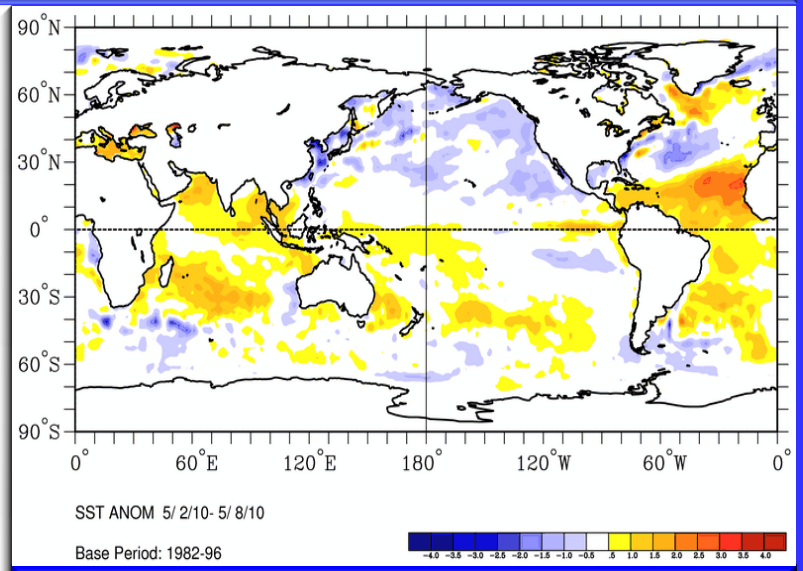
Very Warm Temperatures in the Hurricane Main Development Region of Atlantic Hurricanes [5N-20N]. is very similar to 1969.

The warm water in the north tropical Atlantic, if it persists, creates a climatologic conditions that favors less rainfall in Florida during May through July climate window but a more active tropical season overall.

Correlation south Florida RF with global SSTA for the May-July Season.



The figure on the left illustrates correlation of south Florida rainfall to global sea surface temperature anomalies (SSTA) for: A. Unfiltered, B. decadal variability (AMO, PDO…), C. interannual variability (ENSO, AO, NAO….), D. Intra seasonal Variability.

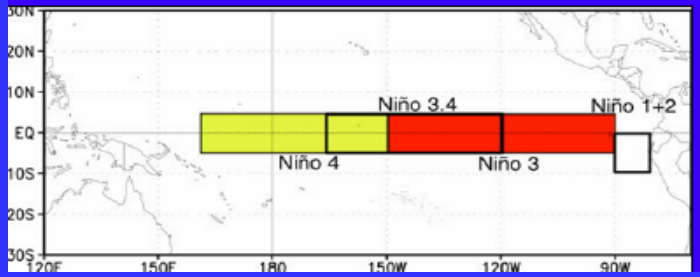


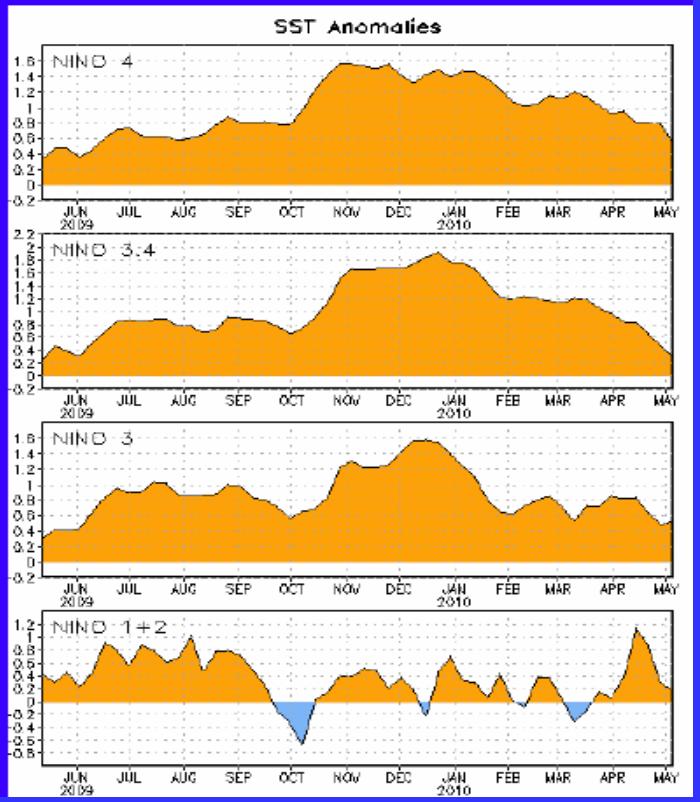
Compare unfiltered correlation map (top left) to the sea surface temperature anomaly map (top right) right. Positive SSTA in regions with negative correlation are regions that favor lower rainfall in central Florida. Likewise negative SSTA where there is positive correlation also indicates regions that support a decrease chance of RF. Much of the global ocean currently favors a tendency toward lower RF in central Florida for the May thru July climate window. High frequency variability in the eastern tropical Pacific tends dominate out the positive El Nino effect on Florida RF for this climate window. High frequency variability likewise dominates low frequency variability such as AMO in the Atlantic .

Niño Region SST Departures (°C)
Recent Evolution

The latest weekly SST departures are:

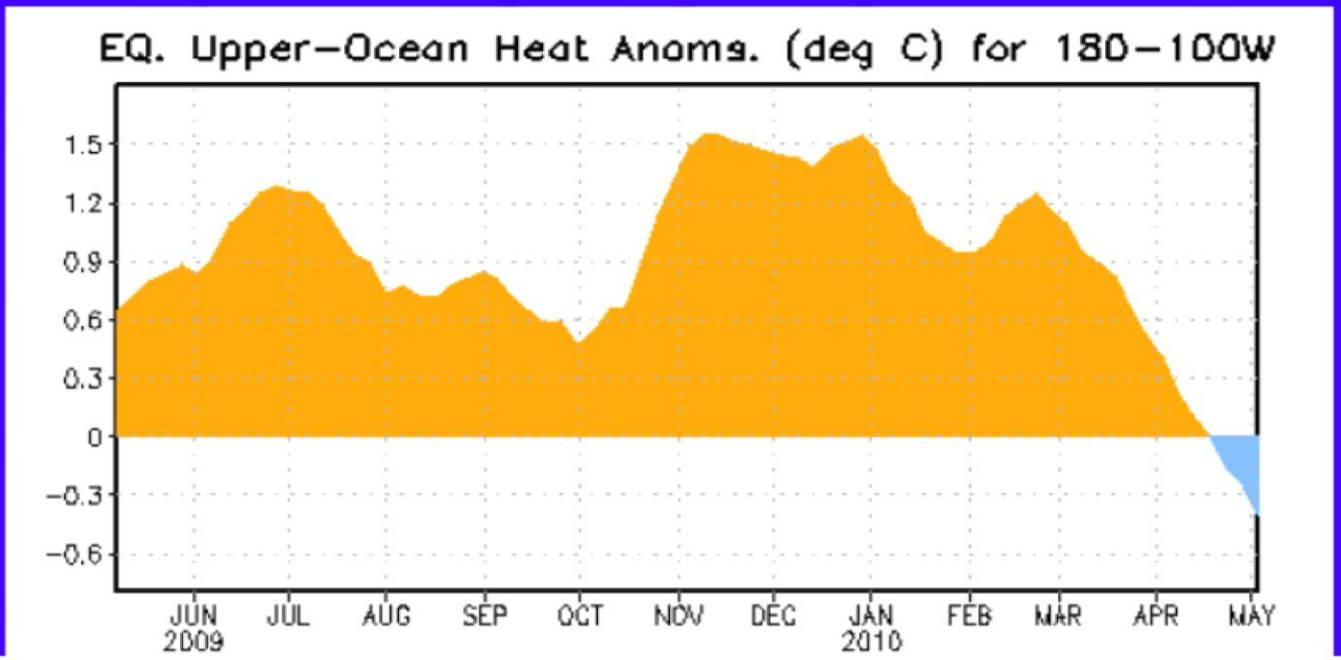
Niño 4	**0.5°C**
Niño 3.4	**0.3°C**
Niño 3	**0.5°C**
Niño 1+2	**0.2°C**





A decline in the Nino temperature anomalies from strong to moderate strength occurred during the period from January through March. In the most recent weeks El Nino has continued to decrease in strength and can barely be classified as a weak El Nino.

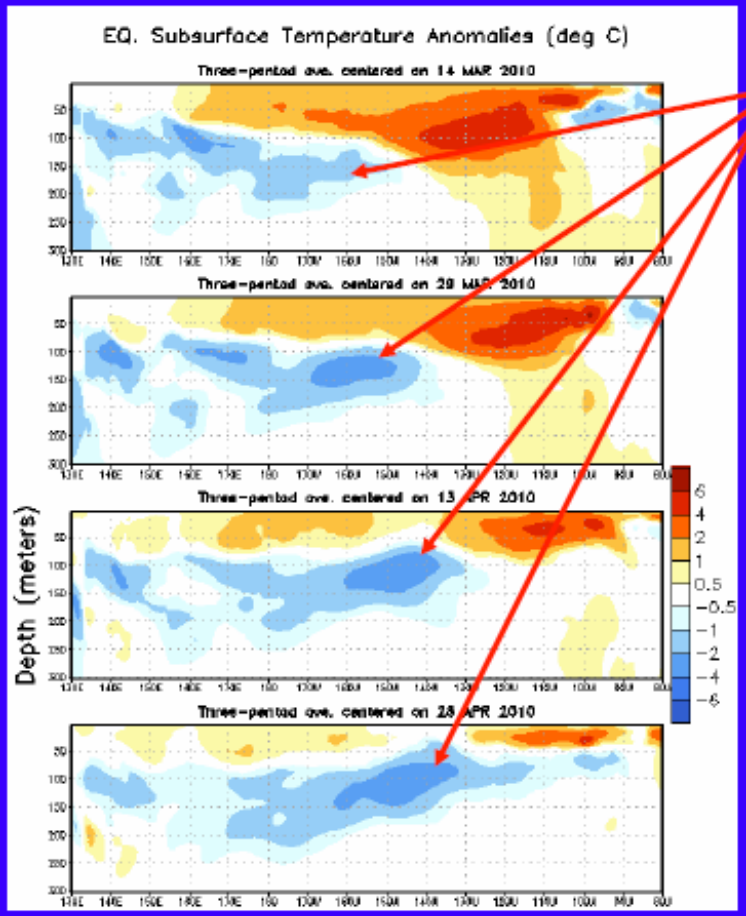
Central & Eastern Pacific Upper-Ocean (0-300 m) Weekly Heat Content Anomalies



Since April 2009, the upper-ocean heat content has been above average across the eastern half of the equatorial Pacific Ocean. Sharp increases in heat content during June and October 2009 coincide with the development and subsequent strengthening of El Niño, respectively. Since late February 2010, the heat content anomalies have steadily decreased and become negative.

The heat content decline in March and April is the largest recorded since 1979, the year the heat content began being estimated.

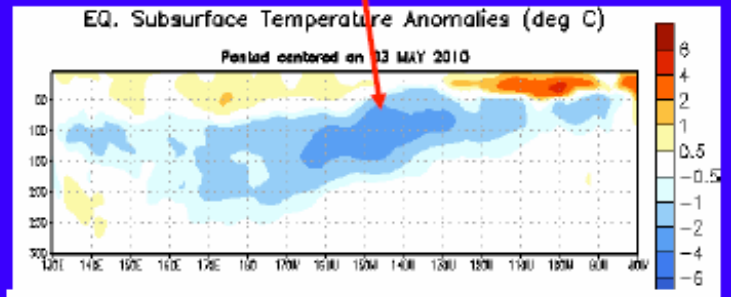
Sub-Surface Temperature Departures (ºC) in the Equatorial Pacific



Time

Longitude

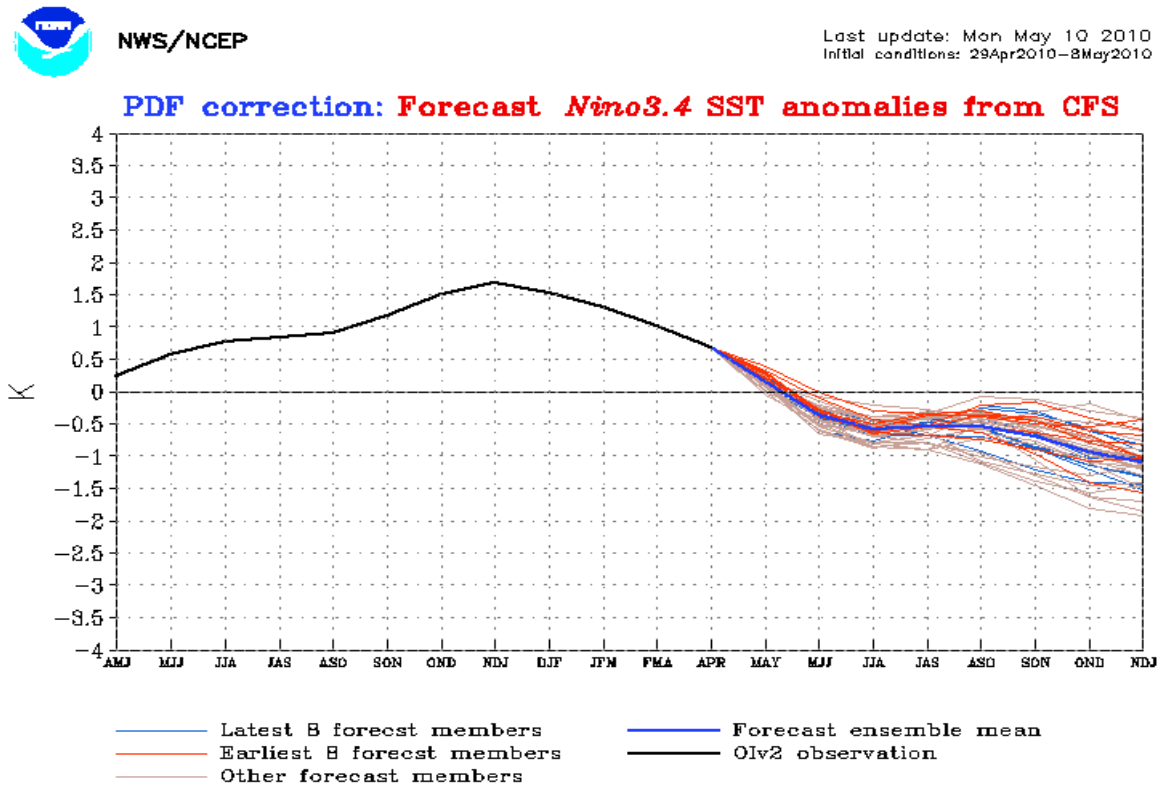
- Since early March 2010, negative subsurface temperature anomalies have shifted eastward in association with the upwelling phase of an oceanic Kelvin wave
- Recently, above-average temperatures have weakened across much of the subsurface equatorial Pacific Ocean. Below-average subsurface temperatures remain at depth (50-200m) in the central and east-central Pacific Ocean.



Most recent pentad analysis

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_update/wkxzteq.shtml

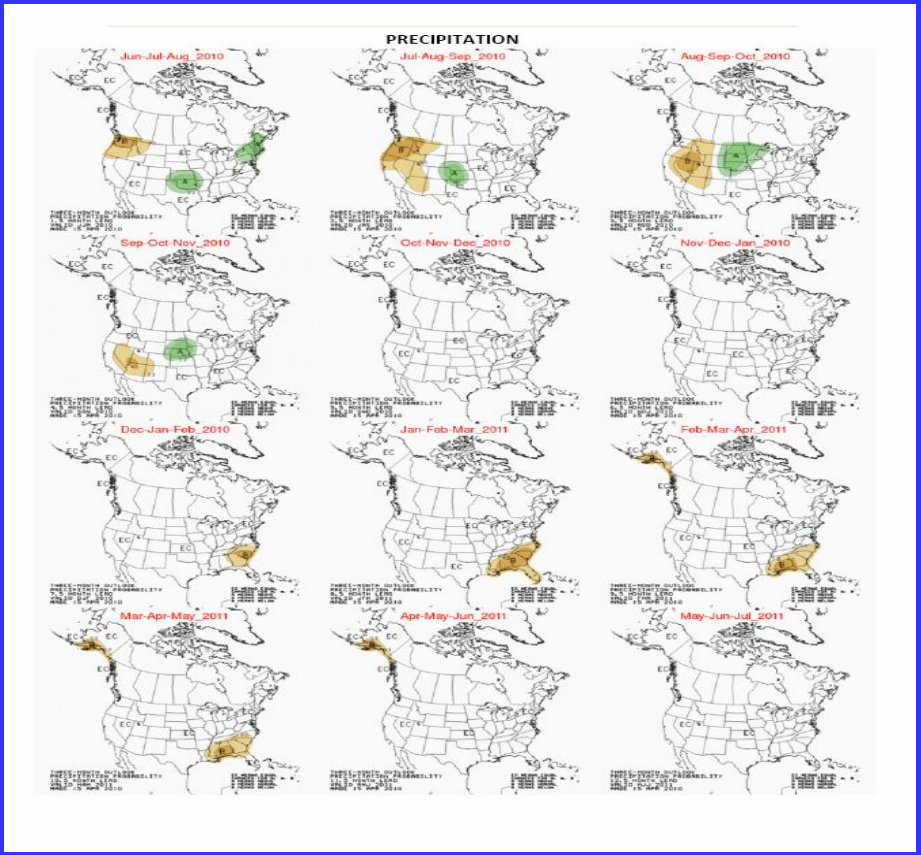
Climate Forecast System El Nino Ensemble



The Climate Forecast System is predicting increased chance of La Nina conditions developing later this summer

Three Month Overlapping Seasonal Outlook

Climate Prediction Center

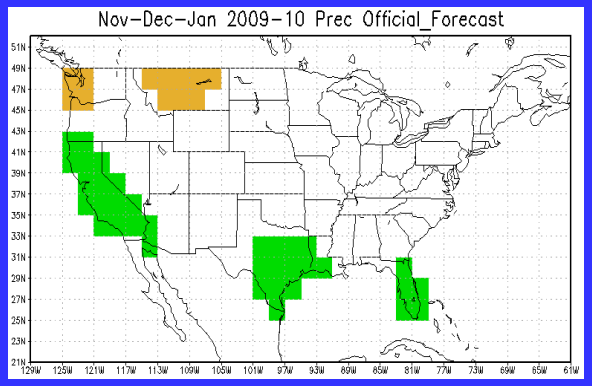


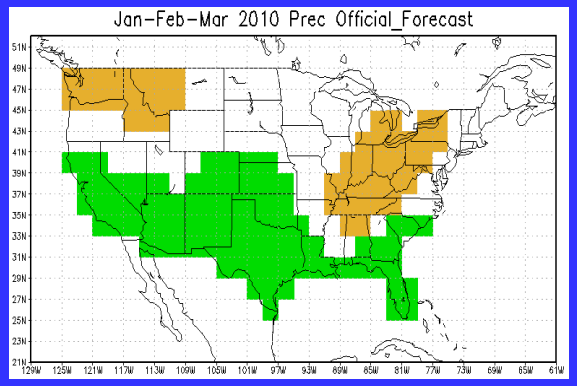
Only one 3- month seasonal climate window has a shift away from climatologic probabilities .

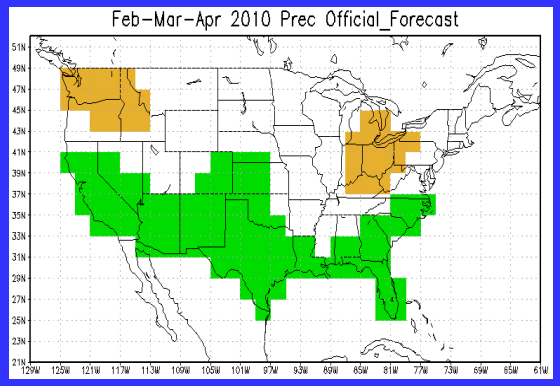
CPC Seasonal Climate Outlook Versus Observed

Dec-Jan-Feb | Jan-Feb-Mar | Feb-Mar-Apr

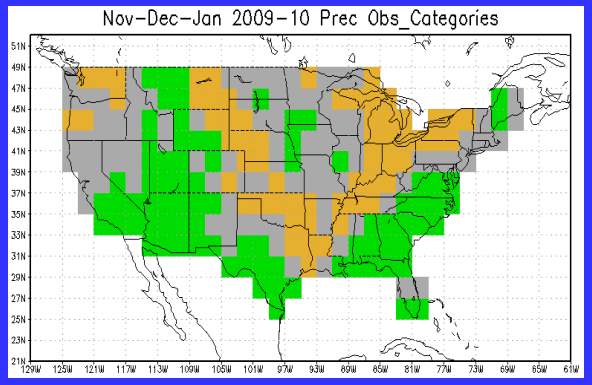
Predicted

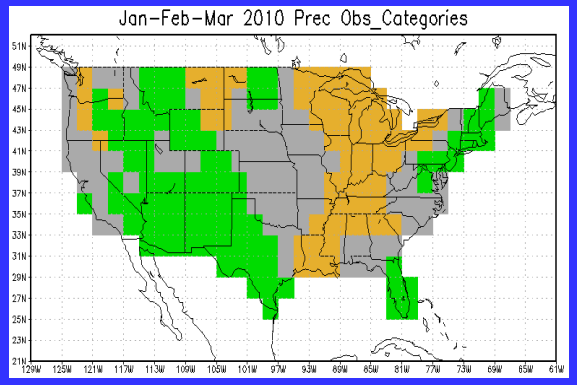


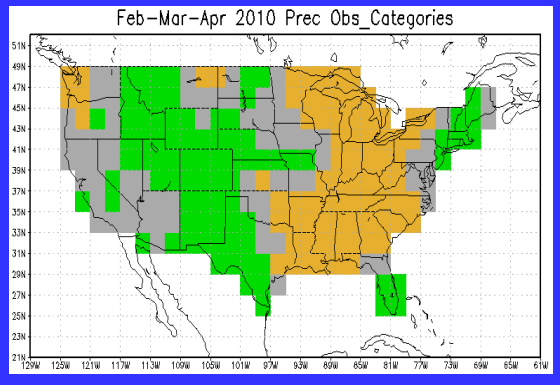




Observed

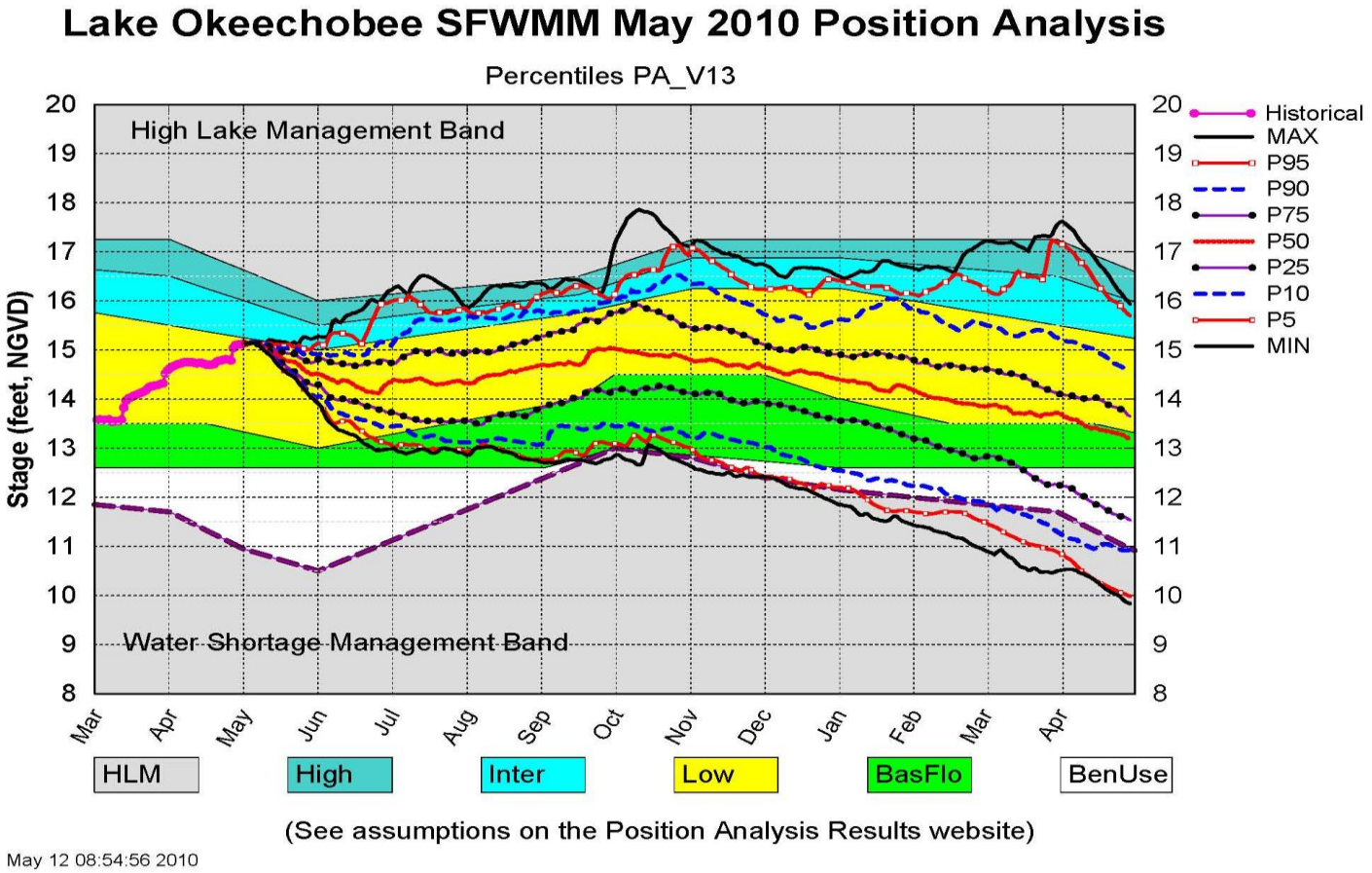




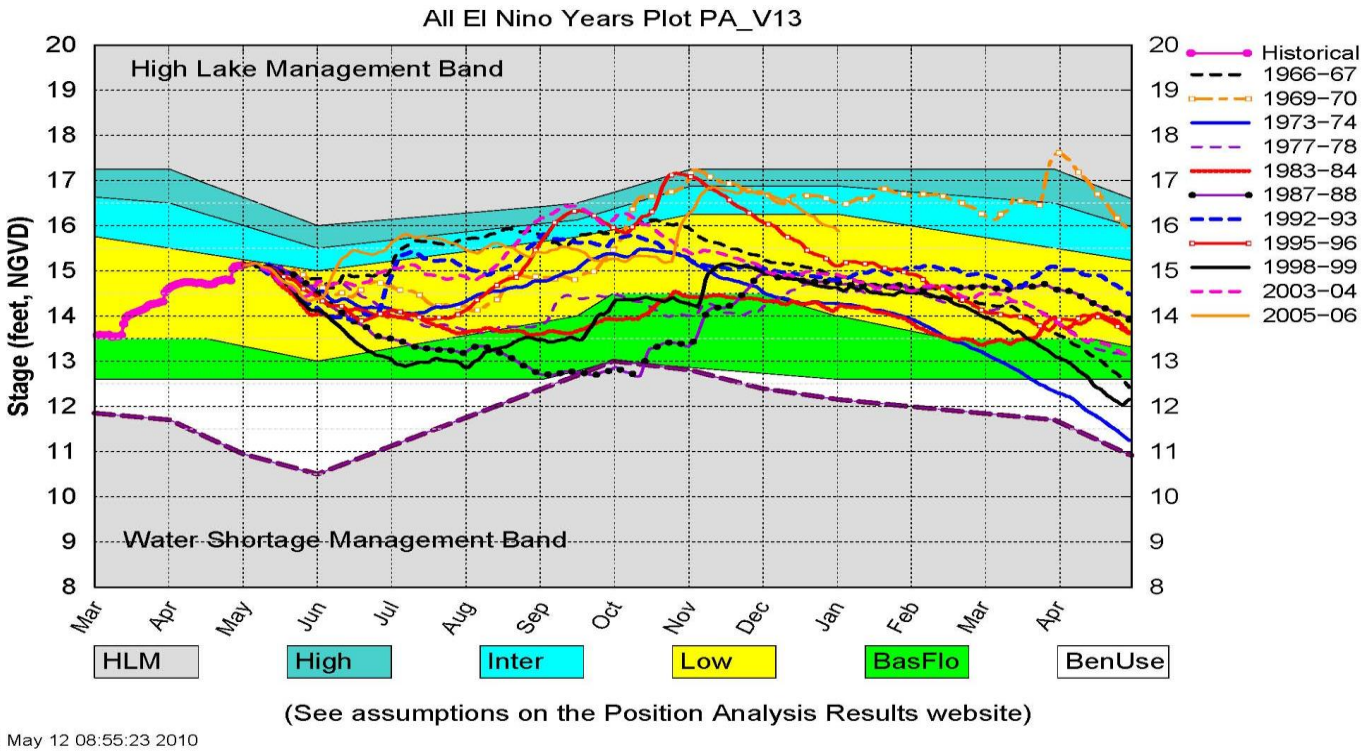


The above normal rainfall for the 2009-2010 dry season was as expected for Florida with an El Nino event.

Position Analysis (PA) Percentiles

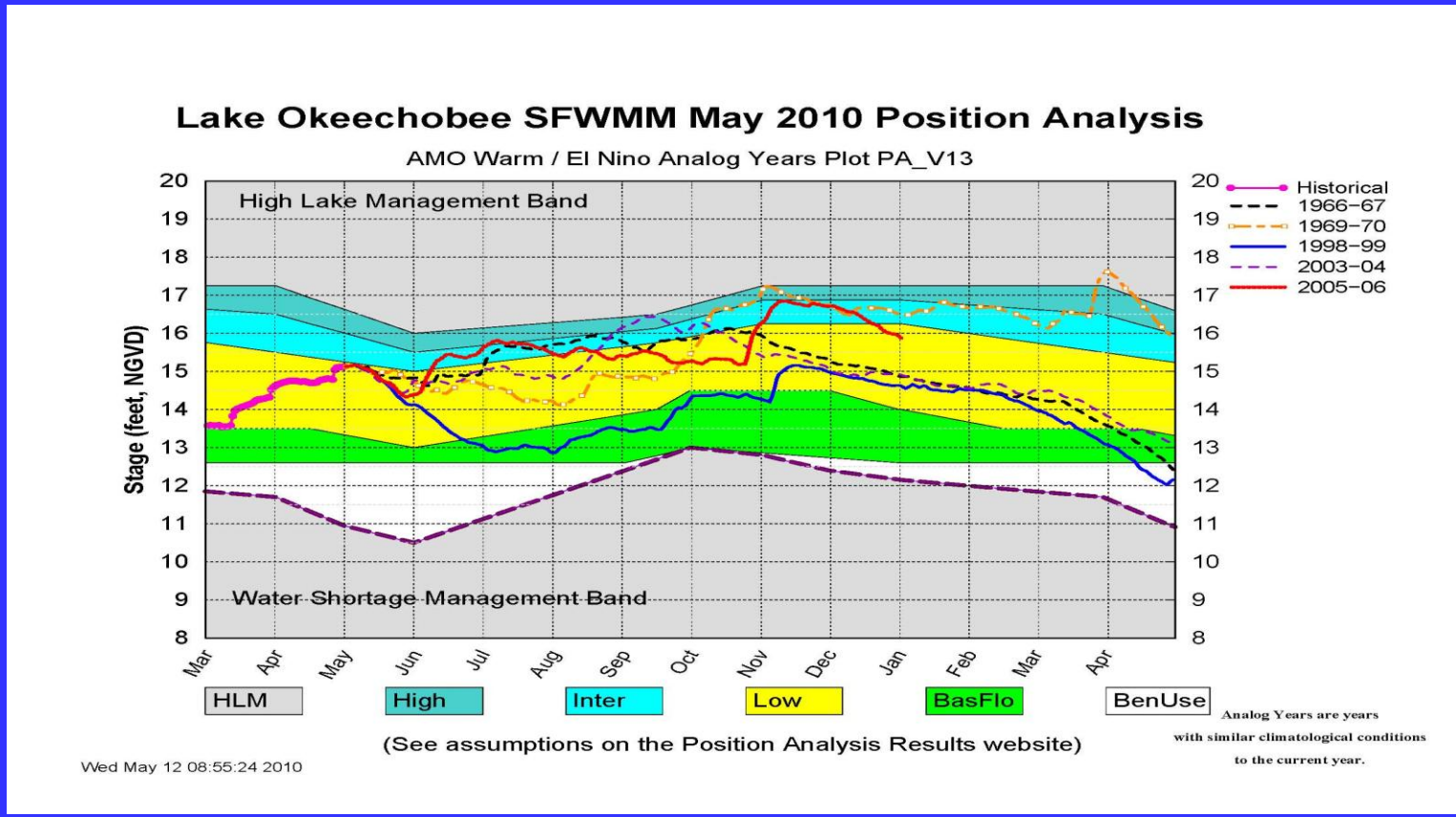


Position Analysis (PA) for El Nino years

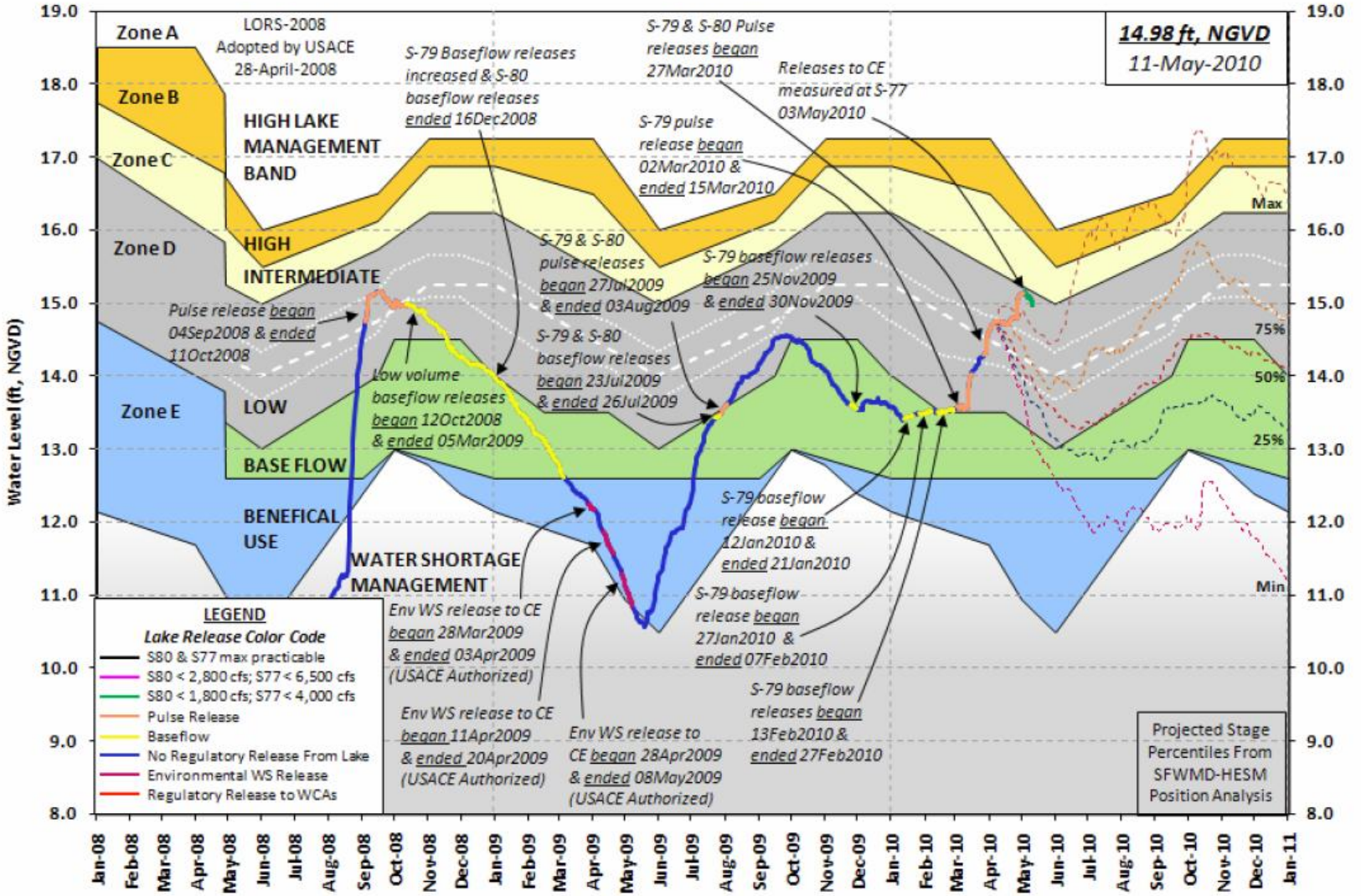


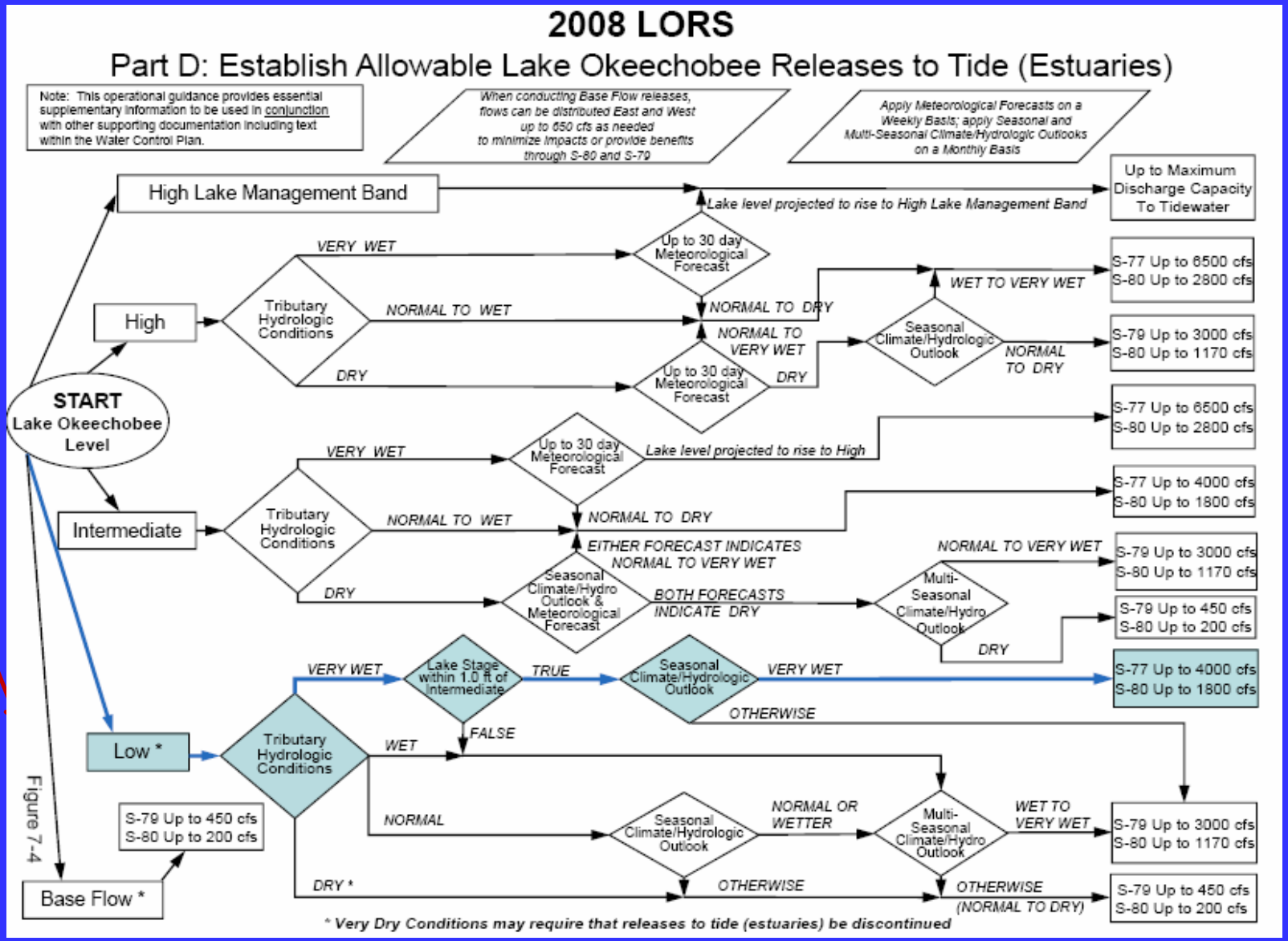
Update Position Analysis (PA)

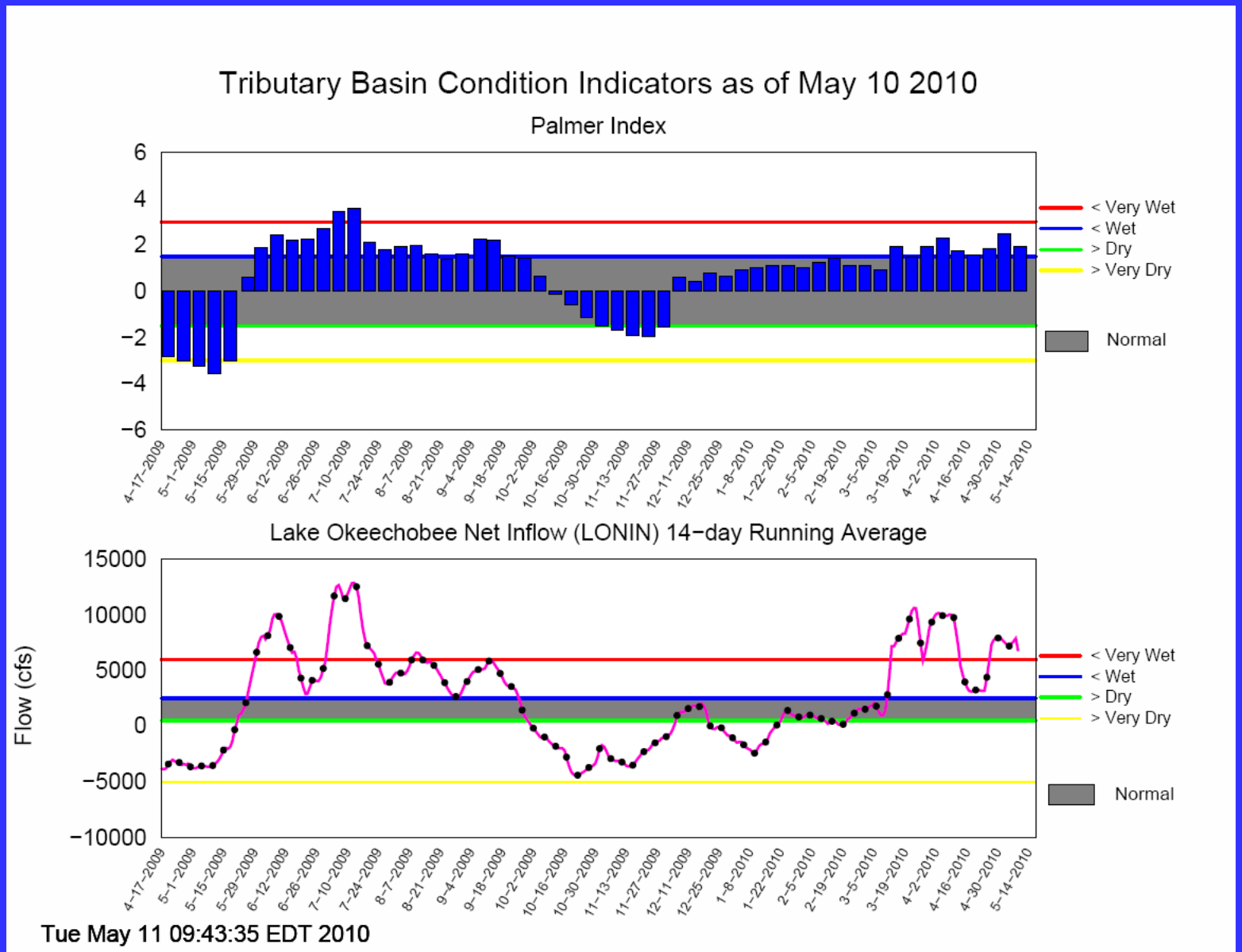
AMO Warm/El Nino Years



Lake Okeechobee Water Level History and Projected Stages




2008 LORS
Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)
Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.
When conducting Base Flow releases, flows can be distributed East and West up to 650 cfs as needed to minimize impacts or provide benefits through S-80 and S-79
Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis
START
Lake Okeechobee Level
High Lake Management Band
Up to Maximum Discharge Capacity To Tidewater
Lake level projected to rise to High Lake Management Band
High
Tributary Hydrologic Conditions
VERY WET
Up to 30 day Meteorological Forecast
NORMAL TO WET
NORMAL TO DRY
WET TO VERY WET
S-77 Up to 6500 cfs
S-80 Up to 2800 cfs
Seasonal Climate/Hydrologic Outlook
NORMAL TO VERY WET
NORMAL TO DRY
S-79 Up to 3000 cfs
S-80 Up to 1170 cfs
DRY
Up to 30 day Meteorological Forecast
DRY
Intermediate
Tributary Hydrologic Conditions
VERY WET
Up to 30 day Meteorological Forecast
Lake level projected to rise to High
S-77 Up to 6500 cfs
S-80 Up to 2800 cfs
NORMAL TO WET
NORMAL TO DRY
S-77 Up to 4000 cfs
S-80 Up to 1800 cfs
EITHER FORECAST INDICATES NORMAL TO VERY WET
NORMAL TO VERY WET
S-79 Up to 3000 cfs
S-80 Up to 1170 cfs
DRY
Seasonal Climate/Hydro Outlook & Meteorological Forecast
BOTH FORECASTS INDICATE DRY
Multi-Seasonal Climate/Hydro Outlook
S-79 Up to 450 cfs
S-80 Up to 200 cfs
DRY
Low *
Tributary Hydrologic Conditions
VERY WET
Lake Stage within 1.0 ft of Intermediate
TRUE
Seasonal Climate/Hydrologic Outlook
VERY WET
S-77 Up to 4000 cfs
S-80 Up to 1800 cfs
OTHERWISE
FALSE
WET
NORMAL
Seasonal Climate/Hydrologic Outlook
NORMAL OR WETTER
Multi-Seasonal Climate/Hydro Outlook
WET TO VERY WET
S-79 Up to 3000 cfs
S-80 Up to 1170 cfs
DRY *
OTHERWISE
OTHERWISE (NORMAL TO DRY)
S-79 Up to 450 cfs
S-80 Up to 200 cfs
S-79 Up to 450 cfs
S-80 Up to 200 cfs
Base Flow *
* Very Dry Conditions may require that releases to tide (estuaries) be discontinued
Figure 7-4


Tributary Basin Condition Indicators as of May 10 2010
Palmer Index
6
4
2
0
−2
−4
−6
< Very Wet
< Wet
> Dry
> Very Dry
Normal
4-17-2009
5-1-2009
5-15-2009
5-29-2009
6-12-2009
6-26-2009
7-10-2009
7-24-2009
8-7-2009
8-21-2009
9-4-2009
9-18-2009
10-2-2009
10-16-2009
10-30-2009
11-13-2009
11-27-2009
12-11-2009
12-25-2009
1-8-2010
1-22-2010
2-5-2010
2-19-2010
3-5-2010
3-19-2010
4-2-2010
4-16-2010
4-30-2010
5-14-2010
Lake Okeechobee Net Inflow (LONIN) 14-day Running Average
Flow (cfs)
15000
10000
5000
0
−5000
−10000
< Very Wet
< Wet
> Dry
> Very Dry
Normal
Tue May 11 09:43:35 EDT 2010

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 05/10/2010 (El Niño Condition)

Lake Okeechobee Net Inflow Outlook:

The Lake Okeechobee Net Inflow Outlook has been computed using 4 methods: Croley's method[1], the SFWMD empirical method[2], a sub-sampling of El Nino warm years[3] and a sub-sampling of warm years of the Atlantic Multidecadal Oscillation (AMO) in combination with El Nino ENSO years[4]. The results for Croley's method and the SFWMD empirical method are based on the CPC Outlook.

Table of the Lake Okeechobee Net Inflow Outlooks in feet of equivalent depth. All methods are updated on a weekly basis with observed net inflow for the current month.

Season	Croley's Method[1]		SFWMD Empirical Method[2]		Sub-sampling of El Nino ENSO Years[3]		Sub-sampling of AMO Warm + El Nino ENSO Years[4]	
	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition
Current (May-Oct)	2.78	Very Wet	2.40	Very Wet	2.57	Very Wet	4.11	Very Wet
Multi Seasonal (May-Apr)	3.24	Wet	2.87	Wet	4.29	Wet	6.44	Very Wet

See Seasonal and Multi-Seasonal tables for the classification of Lake Okeechobee Outlooks.

The recommended methods and values for estimating the Lake Okeechobee Net Inflow Outlook are shaded and should be used in the LORS2008 Release Guidance Flow Charts.